Kant's Theory of Propositions through the Lens of My Model Metaphysical Theory

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Abstract

This paper reconstructs Immanuel Kant's theory of propositions through the lens of My Model Metaphysical Theory (MMMT). Its main claim is that Kant's distinction between analytic and synthetic cognition can be read not only as a classification of judgments, but also as an early philosophical recognition of a structure that later became central to mathematical modeling: the separation between empirical input and formal analytic transformation. The paper further argues that Kant's original way of grounding this structure in fixed pure intuitions of space and time could not remain intact after later developments in mathematics, logic, and physics. Through the model-centered framework of MMMT, and with support from My Model's Theory of Universals (MMToU), Kant's insight is preserved while its transcendental rigidity is softened. Analytic propositions are reinterpreted as system-relative formal operators embedded in broader modeling mechanisms, and mathematical objectivity is reconstructed in terms of stabilized conceptual and formal structures rather than immutable shared forms. The result is a reconstruction that preserves what is deepest in Kant's view while making it more flexible, historically robust, and more adequate to the modern landscape of formal reasoning.

1. Introduction

Immanuel Kant's theory of propositions has had an unusually complicated fate. For more than a century, his distinctions between analytic and synthetic judgments, and between *a priori* and *a posteriori* knowledge, shaped reflection on mathematics, logic, and science. Later developments in philosophy, mathematics, logic, and physics put important parts of that framework under pressure. Yet Kant's theory still matters. The reason is not only historical. It is that Kant appears to have identified something structurally important about cognition itself.

This paper argues that, when read through the lens of My Model Metaphysical Theory (MMMT), Kant's theory of propositions can be understood as an early philosophical articulation of a feature that later became central to mathematical modeling. In many important cases of reasoning, empirical input is first received and organized, then translated into a formal mathematical or logical framework, then analytically transformed within that framework, and finally translated back into a result that can guide judgment, prediction, or action. Kant did not invent mathematical modeling, and he did not foresee the later plurality of formal systems. But

he did help articulate a structural feature that proved decisive: formal reasoning can operate as a distinct component within a broader modeling process.

On this reading, analytic propositions are important not only because of their traditional epistemic classification. They are also important because they belong to the formal part of reasoning that performs controlled transformation once a problem has been represented in a suitable framework. Once empirical content has been translated into equations, geometrical structures, symbolic expressions, or other rule-governed systems, formal operations can be carried out with unusual precision and repeatability. This is one reason the separation between empirical intake and formal transformation became so consequential in the later history of science. It made possible the refinement, standardization, optimization, and eventual automation of large parts of human problem solving.

At the same time, this paper argues that Kant's original way of grounding this structure could not remain intact. Kant treated arithmetic and geometry as paradigmatic cases of synthetic *a priori* knowledge and explained their necessity through the pure intuitions of time and space. That framework was plausible in a period when Euclidean geometry and a relatively narrow picture of formal reasoning seemed to define the deepest forms of exact knowledge. It became much harder to sustain after the rise of non-Euclidean geometries, the development of modern formal systems, the growth of highly abstract mathematics, and major changes in physics. What later developments undermined was not the structural distinction Kant had identified, but the rigidity of the framework in which he explained it (Kant, 1998, A6/B10-A10/B14; B40-B41).

This is where MMMT becomes useful. It is a model-centered metaphysical framework in which cognition, science, and conceptual organization are understood in terms of model formation and model use rather than access to absolute, unconditioned truth (Khachatryan, 2023). From this perspective, what Kant treated as fixed transcendental structures can be reinterpreted as highly stable but revisable default models used by human minds. Likewise, analytic propositions can be reinterpreted as system-relative formal operators embedded within broader modeling mechanisms. This preserves what is deepest in Kant's insight while removing the claim that the relevant structures are unique, immutable, and finally authoritative.

A further advantage of this reconstruction is that it allows mathematical objectivity to be reinterpreted without relying on Kant's strongest claims about fixed shared forms of intuition. Here My Model's Theory of Universals (MMToU) provides an important supplement. In MMToU, universals are agent-level classificatory structures, while interuniversals are collective stabilizations of such structures across many agents through language, education, shared practice, and institutional constraints (Khachatryan and ChatGPT 5.2, 2026). This makes it possible to explain why mathematical concepts can remain highly stable, intersubjectively shared, and operationally objective even if they are not grounded in immutable transcendental forms.

The paper advances two connected claims. The first is the main claim: through the lens of MMMT, Kant's theory of propositions can be reconstructed as an early philosophical recognition of a modeling architecture in which empirical input is separated from formal analytic

transformation. The second is a supporting claim: later developments in mathematics, logic, and physics weakened Kant's original way of grounding this architecture, but did not eliminate the structural insight itself. MMMT preserves that insight while replacing its original transcendental foundation with a more flexible account based on modeling, default cognitive structures, and system-relative analyticity.

This paper is not intended as a full exegesis of the *Critique of Pure Reason*, nor as a general survey of post-Kantian philosophy of mathematics and logic. Its aim is narrower and more constructive. I focus on those elements of Kant's theory of propositions most relevant to the architecture of modeling: the distinction between analytic and synthetic judgments, the role of the *a priori*, the significance of mathematics, and the function of space and time in grounding formal cognition. I then reinterpret these elements through MMMT and MMToU and use that reconstruction to argue for a revised understanding of analyticity.

The structure of the paper is as follows. Section 2 introduces the minimal conceptual background from MMMT and MMToU needed for the argument. Section 3 reconstructs the structural core of Kant's theory of propositions. Section 4 develops the central reinterpretation of Kant through the lens of modeling. Section 5 explains why Kant's original grounding in fixed pure intuitions could not remain intact. Section 6 discusses analyticity after Kant and after Quine and formulates the position defended in this paper. Section 7 addresses mathematical objectivity from the perspective of MMToU. Section 8 explains why the separation between empirical input and formal analytic transformation had such far-reaching historical and methodological consequences. The conclusion returns to the central question: what still matters in Kant's theory once its original transcendental framework is revised?

2. The MMMT Framework Needed for the Argument

This paper does not restate MMMT in full. Only a limited part of the framework is needed here. Four ideas are especially important. First, cognition and science are treated as activities of model formation and model use. Second, human knowers do not have access to a privileged standpoint outside all modeling. Third, concepts and classifications are understood as structures internal to minds and communities rather than as ready-made labels attached to things. Fourth, formal reasoning can function as a distinct component within broader modeling processes. Together, these ideas provide the framework in which Kant's theory can be re-read.

2.1. MMMT as a model-centered framework

MMMT begins from the claim that knowledge is always mediated by models. This is stronger than the familiar thought that scientific theories are models. The broader claim is that perception, thought, language, and scientific reasoning all operate by constructing and using organized representations of what is encountered. A model, in this broad sense, is any structure that allows a system to interpret input, relate it to prior organization, and guide further thought or action.

MMMT expresses this through several nested concepts. Data System (DS) names the most general level: the total system within which objects, processes, observers, languages, and theories are treated as forms of organized data. The Model (TM) is the aggregate of all human experiences, thoughts, perceptions, beliefs, and knowledge. My Model (MM) is the subset of TM belonging to a particular person: that person's organized way of seeing and understanding the world. For the purposes of this paper, the important consequence is clear. Human cognition is not a transparent window onto an unmediated reality. It is a process of model construction within a larger system of modeling.

This immediately changes the background against which Kant is read. Kant asked how universal and necessary knowledge is possible for beings like us. MMMT approaches the same issue from a different angle. It asks how a cognitive system, operating from within its own model of the world, can construct stable and effective structures for interpreting experience and guiding action.

2.2. Modeling as the basic cognitive operation

Once this model-centered stance is adopted, perception and cognition appear not as fundamentally different kinds of activity, but as different levels of modeling. Perception is already structured: what is received is organized, classified, and made meaningful within a model. Cognition extends this work by refining, combining, and transforming such structures. Language, mathematics, logic, and scientific theories are therefore not external additions to an otherwise direct relation to the world. They are more explicit and more disciplined forms of the same general modeling activity.

This matters because it allows reasoning to be described as a multi-stage process. A problem is first interpreted and organized into a usable representation. In many important cases, that representation is then translated into a more formal framework. Formal operations are carried out within that framework. The result is then translated back into a form that supports understanding, prediction, or action. This general structure is what the present paper calls a Modeling Mechanism (MMech).

The notion is broader than mathematical calculation, but mathematical calculation is one of its clearest forms. Once a problem has been represented in a formal language, rule-governed transformations can be performed with a degree of precision and repeatability unavailable at the level of ordinary perceptual or linguistic reasoning. The central proposal defended later is that analytic propositions belong to this formal component of a broader modeling mechanism. They are not the whole of reasoning, but they are often the part that carries out the controlled derivational work.

2.3. No God's Eye View and epistemic modesty

A second feature of MMMT is equally important. It rejects a God's Eye View. No human knower occupies a standpoint outside all models from which the world can be grasped exactly as

it is in itself, unconditioned by perspective, conceptual structure, or means of access. Every description, judgment, and theory is produced from within some model and remains conditioned by that model.

This does not imply skepticism or arbitrariness. It means that even our best knowledge remains model-dependent, revisable, and constrained by the structures through which it is produced. This point matters here for two reasons. First, it blocks the idea that there is a single final formalism built into reason as such and uniquely adequate to all possible cognition. Second, it helps reinterpret Kant's own claims about space, time, and necessity. What appears fixed and universal from within a long-stable cognitive regime may in fact be a highly entrenched default model rather than an immutable transcendental structure.

This distinction is central to the paper. If what Kant took to be necessary forms of cognition can be reinterpreted as highly stable default models, then one can preserve the structural insight of his theory without retaining its strongest rigidity claims. The shift is not from objectivity to arbitrariness, but from absolute necessity to stability, effectiveness, and revisability within the history of modeling practices.

2.4. Universals, interuniversals, and mathematical objectivity

One further element is needed, drawn from MMToU. Kant's theory of propositions is also a theory of universality. If mathematics yields judgments valid for all knowers of a certain kind, then some account must be given of how such shared concepts and shared structures are possible. Kant's answer appealed to common forms of intuition and common structures of cognition. MMToU offers a different route.

In MMToU, a universal is an agent-level classificatory structure. It is a data structure within a mind that groups distinct particulars under a common role or label and thereby supports prediction, inference, and action. An interuniversal is a collective stabilization of such structures across many minds. It is maintained through language, education, shared practice, institutional norms, and material supports such as diagrams, textbooks, measurement procedures, and proof standards.

This is useful because it provides a model-centered account of mathematical objectivity. Concepts such as triangle, number, continuity, or function do not need to be grounded in immutable transcendental forms in order to be stable and highly objective in practice. Their objectivity can instead be explained by the convergence and stabilization of universals across many agents under powerful shared constraints. Mathematical rigor, proof, common notation, and pedagogical discipline all strengthen the corresponding interuniversals. The result is a structure that is highly resistant to individual variation and therefore appears objective in a robust sense.

2.5. Why this framework matters here

The concepts introduced in this section can now be gathered into a single point. MMMT treats cognition as modeling, formal reasoning as one component within broader modeling mechanisms, and objectivity as something reconstructed through stability and convergence rather than guaranteed by access to an absolute standpoint. MMToU supplements this by explaining how shared concepts can arise and remain highly robust without being grounded in fixed transcendental forms.

The rest of the paper uses this framework to make a specific claim. Kant's distinction between analytic and synthetic cognition did not merely classify judgments. It also marked, in an early form, a structural separation within reasoning itself: the separation between empirical intake and formal transformation. To see this clearly, however, we must first reconstruct the relevant core of Kant's own theory in its original form.

3. Kant's Theory of Propositions: The Structural Core

To read Kant through the lens of MMMT, we first need a clear picture of the part of his theory that matters for this paper. The goal is not to summarize the whole *Critique of Pure Reason*. The goal is to extract the part of Kant's theory most relevant to our question: what did Kant think different kinds of judgments do, and why did mathematics play such an important role in that picture?

The main point of this section is simple. Kant's theory of propositions is not just a way of sorting statements into categories. It is also a theory about different kinds of cognitive work. Some judgments only clarify what we already think in a concept. Other judgments genuinely add something new. Kant believed that mathematics belongs to the second group. But mathematics also seems to have necessity and universality. This creates the central problem: how can a judgment add new knowledge and still be necessary rather than empirical? Later in the paper I will argue that this problem led Kant to identify, in an early form, a structural feature that MMMT can reinterpret as part of a modeling architecture.

3.1. Why Kant needed these distinctions

Kant's starting point is a basic philosophical difficulty. Human knowledge begins with experience. We observe, measure, compare, and learn from the world. At the same time, some parts of our knowledge seem to be more than empirical habits. Mathematics, and in Kant's view the best parts of natural science, appear to be universal and necessary. They do not seem to state only what happens to be the case. They seem to state what must be the case.

Kant wanted to explain how both things can be true at once. How can human beings, whose cognition begins with experience, possess judgments that are not justified by experience in the ordinary way? To answer this question, he had to distinguish different kinds of judgments.

Without such distinctions, logic, mathematics, empirical science, and metaphysics would collapse into one undifferentiated domain.

For that reason, Kant's theory of propositions should not be seen as a merely formal classification scheme. It is part of a broader attempt to explain how human cognition works, what its limits are, and why some domains of knowledge have a stronger claim to necessity than others.

3.2. Analytic and synthetic judgments

Kant's first major distinction is between analytic and synthetic judgments.

An analytic judgment is one in which the predicate is already contained in the subject concept. Such a judgment does not add new content in a strong sense. It makes explicit something that was already implicit in the concept. A standard example is: "all bodies are extended." If extension already belongs to the concept of body, then the judgment does not enlarge our knowledge. It clarifies what is already thought when we think the concept.

A synthetic judgment is different. Here the predicate is not already contained in the subject concept in the same way. The judgment adds something to what we think in the concept and therefore extends cognition. Kant's standard example is: "all bodies are heavy." Whatever one thinks of the example itself, the intended point is clear. The concept of body, taken by itself, does not analytically contain weight. To connect body and weight is to say something new.

For this paper, the deeper point is functional. Analytic judgments clarify. Synthetic judgments extend. Kant also links analytic judgments to the principle of non-contradiction: if a judgment is genuinely analytic, denying it leads to contradiction because one is denying something already thought in the concept itself. Synthetic judgments cannot be justified in this way. If they are justified, their justification must come from another source (Kant, 1998, A6/B10-A7/B11).

3.3. A priori and a posteriori judgments

Kant's second major distinction is between *a priori* and *a posteriori* judgments.

An *a posteriori* judgment depends on experience for its justification. We know it because we observe, measure, or otherwise learn from what is given to us. Its validity is therefore tied to empirical input.

An *a priori* judgment does not depend on experience in that way. This does not mean that it is learned in complete isolation from all human experience. Kant's point is more precise: its justification does not require us to consult experience case by case. If it is valid, it is valid with necessity and universality for the relevant domain.

When these two distinctions are combined, the most difficult case is synthetic *a priori* judgment. Here a judgment adds something new and yet does so with necessity and universality rather than on the basis of contingent observation. This is the center of Kant's problem. If all

necessary judgments were analytic, mathematics would have to be reduced to conceptual unpacking. If all synthetic judgments were empirical, mathematics would lose its necessity. Kant rejected both options.

3.4. Why mathematics was central for Kant

Mathematics was crucial for Kant because it seemed to provide the clearest examples of synthetic *a priori* judgment.

Take arithmetic. Kant did not think that a proposition such as "7 + 5 = 12" is analytic. In his view, the concept of 12 is not simply contained in the combined concepts of 7, 5, and addition. To arrive at 12, the mind must do something. It must carry out a synthesis.

The same applies to geometry. A geometrical theorem is not, for Kant, merely hidden inside the definition of the figure and then extracted by conceptual analysis. Rather, the mind must work with the figure, construct it, and see what follows from that construction.

This is why Kant says that mathematics proceeds by construction. To construct a concept is not merely to define it in words. It is to exhibit it in intuition and then reason through that presentation. In geometry, this means constructing figures in space. In arithmetic, it means generating succession in time. Mathematics is therefore neither simple empirical observation nor mere logical analysis of concepts. It is a distinctive form of cognitive activity.

For the present paper, this is more important than Kant's abstract definitions taken by themselves. His treatment of mathematics shows most clearly what problem he was trying to solve. He wanted to explain how disciplined formal reasoning can produce new knowledge without becoming empirical in the ordinary sense.

3.5. Space and time in Kant's account

Kant's answer depends on his doctrine that space and time are the pure forms of intuition.

Space is the form of outer intuition. It structures how objects are given to us externally. Time is the form of inner intuition. It structures succession and the temporal ordering of mental acts. Kant does not treat space and time as concepts abstracted from experience. He treats them as conditions that make certain kinds of experience possible in the first place.

This is why geometry is grounded in space and arithmetic in time. Geometry is possible because the mind can construct figures in pure spatial intuition. Arithmetic is possible because the mind can generate ordered succession in time. In this way Kant explains how mathematics can be both informative and necessary. It is informative because it is not mere conceptual analysis. It is necessary because it is grounded in the forms through which experience is possible for beings like us (Kant, 1998, B15-B16; A22/B37-A25/B39; A33/B49-A34/B50).

This is also the part of Kant's framework that later became vulnerable. His explanation of mathematical necessity is tied to a specific view of human intuition and to a relatively narrow understanding of what mathematics fundamentally is. As long as Euclidean geometry and

arithmetic seemed to define the deepest structure of exact knowledge, this framework looked highly plausible. Later developments changed that situation. For now, the key point is simpler: in Kant's theory, space and time are not secondary details. They are what make synthetic *a priori* mathematics possible.

3.6. The structural point that matters for this paper

We can now state the core point of this section as clearly as possible.

Kant's theory says that not all reasoning works in the same way. Some judgments only clarify concepts. Other judgments extend cognition. Mathematics belongs to the second group. But mathematics does not work like ordinary empirical learning. It requires a different kind of cognitive operation. In Kant's own framework, that operation involves construction in pure intuition.

If we step back from Kant's original terminology, a broader structural pattern becomes visible. Experience by itself does not produce mathematical knowledge. Mere conceptual analysis does not produce it either. Mathematical cognition arises when what is given is taken up into a structured framework that allows disciplined transformation according to rules. In Kant's language, this framework involves concepts and intuition. In the language of this paper, it points toward a distinction between two functions: first, the intake and organization of content; second, the formal treatment of that content once it has been brought into a suitable representational form.

This is the point at which the connection to MMMT begins. The claim is not that Kant already had a modern theory of modeling. The claim is narrower and more defensible. Kant identified a structural difference within cognition that later becomes especially visible in mathematical modeling: the difference between receiving and organizing input, on the one hand, and carrying out disciplined formal transformation, on the other. That structural difference is what the next section will reinterpret through the lens of MMMT.

4. Kant through the Lens of MMMT: From Proposition Theory to Modeling Architecture

The main claim of this paper can now be stated directly. When Kant's theory of propositions is read through the lens of MMMT, it can be reconstructed as an early philosophical recognition of a structure that later became central to mathematical modeling. Kant did not describe that structure in the language of models, formal systems, or algorithmic procedures. He described it in the language available to him: concepts, intuition, synthesis, and the distinction between analytic and synthetic cognition. But once his account is translated into a model-centered framework, a more general pattern becomes visible.

The point is not to force Kant into a vocabulary he did not possess. It is to show that MMMT can make explicit a structural feature that Kant identified but could not formulate in later terms.

Once that feature is seen clearly, analytic propositions take on a new significance. They are not merely one class of judgments among others. They belong to the formal component that performs the controlled transformation of represented content.

4.1. The central reinterpretation

Kant distinguishes between judgments that clarify concepts and judgments that extend cognition. He then argues that mathematics extends cognition, but does so in a non-empirical way. This already suggests that cognition is not a single undifferentiated process. Different kinds of work are being done. Some operations concern the clarification of concepts. Others concern the disciplined production of new results.

From the perspective of MMMT, this can be described more operationally. A cognitive agent does not normally solve a problem by remaining at the level of immediate experience. The agent first interprets the situation in a way that makes it cognitively usable. In many important cases, the agent then translates that interpretation into a formal framework. Within that framework, rule-governed operations are carried out. The result is then translated back into an ordinary conceptual or practical form.

This is the point at which Kant's distinction becomes newly illuminating. His theory does not yet contain the explicit idea of a modeling pipeline. But it does isolate a separation between what is given and a disciplined form of transformation that works on represented content according to rules. That is the structural feature that MMMT generalizes.

4.2. The Modeling Mechanism

In MMMT, this broader structure can be described as a Modeling Mechanism (MMech). A modeling mechanism is a process in which a cognitive system receives input, organizes it into a usable representation, performs transformations on that representation, and uses the resulting output to guide further thought or action.

For the purposes of this paper, one form of modeling mechanism is especially important: the form in which a problem is translated into a mathematical or logical framework and then processed within that framework. In such cases the structure becomes unusually clear. The process can be described in seven stages.

First, some input is registered. Second, the input is interpreted: the agent identifies what kind of situation this is and which features are relevant. Third, the interpreted content is translated into a form suitable for formal treatment. Fourth, that formal representation is processed within a mathematical or logical system. Fifth, formal results are obtained. Sixth, those results are translated back into an ordinary conceptual or practical form. Seventh, the agent uses them to solve a problem, revise a belief, make a prediction, or guide action.

The details vary from case to case, but the structure is stable. The formal component is not the whole process. It does not create its own input, and by itself it does not decide how its results

will matter in practice. But once the relevant translation has taken place, it becomes a distinct engine of transformation.

4.3. A simple example

A simple example makes the structure easier to see.

Suppose I look at a ceiling and want to estimate how much paint is needed to cover it. At first I am dealing with an ordinary perceptual situation. I see a ceiling. I notice its boundaries. I identify which features matter for the task. This is not yet formal reasoning. It is interpretation of a practical situation.

The next step is crucial. I idealize the ceiling as a rectangle and represent its dimensions numerically. At this point the situation has been translated into a geometrical and arithmetical framework. Once that translation is complete, I can calculate the area by multiplying length by width. This part of the process is rule-governed. It is not another act of perception, and it does not require me to inspect the physical ceiling again. The formalism carries the transformation.

Finally, I translate the result back into the practical situation. The computed area becomes an estimate of the amount of paint needed. The result is then used to guide action. The perceptual and practical situation is first interpreted, then formally represented, then analytically transformed, and then reconnected to action. This is a clear case of a modeling mechanism.

4.4. Mapping Kant's account onto the Modeling Mechanism

Kant begins from the fact that cognition starts with experience. Something must be given. But he insists that what is given is not enough to explain mathematics. Mathematics requires an additional operation. In his framework, this operation is construction in pure intuition. A concept must be exhibited, worked through, and transformed according to rules. Only then do we arrive at a mathematical result.

If we translate this into MMMT's vocabulary, the parallel becomes visible. What Kant calls the beginning of cognition in experience corresponds to the intake side of the modeling mechanism. What he calls construction corresponds to the stage at which content is brought into a structure that allows disciplined transformation. And what he treats as the necessity of mathematical reasoning corresponds, in a more general modern vocabulary, to the rule-governed behavior of a formal system once a problem has been represented within it.

The point is not that Kant's pure intuition is identical to a modern formal language. It is not. Kant still ties mathematical cognition to space and time in a way that modern formal systems do not require. The point is structural similarity. In both cases there is a distinct stage at which cognition ceases to be mere reception and becomes disciplined transformation within a structured medium.

4.5. Why analytic components matter

Once the modeling mechanism is seen clearly, the role of analytic propositions becomes easier to understand. They are important because they belong to the formal component of reasoning that performs controlled transformation.

Suppose a situation has already been represented within a formal framework. At that point, the main task is no longer to gather additional empirical input. The task is to derive consequences from what has been represented. This is the stage at which reasoning becomes especially teachable, repeatable, and precise. The system has rules. Those rules determine which moves are allowed, which conclusions follow, and which transformations preserve the relevant structure.

In Kant's own framework, analytic judgments were often treated as clarificatory and, in that sense, limited. From the perspective of modeling, however, that is only part of the story. Formal analytic operations may be "empty" in the sense that they do not by themselves provide empirical content. But they are powerful precisely because they can transform represented content with exceptional control once that content has entered the formal stage of the process.

The significance of this point is easy to underestimate. If we focus only on Kant's original terminology, we see a theory of analytic and synthetic judgment, of space and time, and of mathematics as synthetic *a priori*. If we look at the structure, we see something more general: a distinction between the reception and organization of content, on the one hand, and its formal transformation, on the other. That distinction later becomes central to mathematical modeling, and it is the distinction that MMMT can state more clearly than Kant's original framework allowed.

5. Why Kant's Original Grounding Could Not Remain Intact

The argument so far has been selective but charitable. Kant identified a structural distinction that remains philosophically important: the distinction between what is given to cognition and the formal operations through which cognition transforms what is given. Through the lens of MMMT, this can be reconstructed as an early recognition of a modeling architecture. But this does not mean that Kant's own explanation of that architecture can simply be retained. The purpose of this section is to explain why not.

Before proceeding, one term should be clarified. In Kant's philosophy, transcendental does not mean supernatural or beyond all possible thought. It refers to the conditions that make experience and knowledge possible for beings like us. When Kant speaks of the transcendental role of space, time, or the categories, he means that they are not derived from particular experiences but belong to the framework that makes such experience possible in the first place.

5.1. The strength and rigidity of Kant's framework

Kant's framework had real explanatory power. It allowed him to explain why mathematics seemed both necessary and informative, and it drew a sharp distinction between empirical input and formal cognitive work. That is why the theory remained so influential.

But its strength was inseparable from its rigidity. Kant did not say only that human cognition uses stable structures. He said that space and time are the pure forms of intuition for minds like ours and that mathematics, in its deepest legitimate form, is grounded in those forms. In the same spirit, he treated the classical framework of logic as fixed in a way that later philosophy would find difficult to sustain.

This is the point at which MMMT begins to diverge. MMMT can preserve the idea that human cognition operates with highly stable default structures without accepting that those structures are uniquely necessary, immutable, or final. What appears fixed from within a long-stable cognitive regime may be better understood as a deeply entrenched and highly successful default model.

A further qualification is important here. Kant's framework is rigid, but not quite as rigid as it is sometimes made to sound. His theory is explicitly about the conditions of experience for minds like ours, not about all possible minds whatsoever. In that sense, the theory already contains a relational element: the relevant structures are indexed to a type of knower. Later evolutionary epistemology, especially in the work of Konrad Lorenz, sharpened this point by arguing that what is *a priori* for the individual may be *a posteriori* for the species — biologically acquired across evolutionary history rather than metaphysically fixed. Work in spatial cognition also suggests that human spatial representation is not perfectly uniform even within our species, but varies with language, culture, and environment. These considerations do not preserve Kant's original transcendental grounding in its strong form, but they do show that his position is closer to a model-relative account of cognition than a purely absolute reading would suggest (Lorenz, 2009; Majid et al., 2004).

5.2. Pressure from later mathematics

The first major source of pressure came from mathematics itself. Kant's account was developed in a world in which Euclidean geometry and arithmetic appeared to define the core of exact knowledge. That made it plausible to think that the pure intuitions of space and time grounded the deepest forms of mathematics available to the human mind.

Later mathematics widened this landscape dramatically. Non-Euclidean geometries showed that coherent geometrical systems could be built without Euclid's parallel postulate. Modern abstract algebra, topology, measure theory, set theory, and other branches of mathematics widened the gap still further. Formal mathematical thought proved able to move far beyond what could plausibly be described as direct construction in ordinary spatial or temporal intuition.

The point is not that Kant was simply refuted by later mathematics. The point is that his explanation of mathematical necessity was tied too closely to a narrow picture of the forms through which mathematics could legitimately develop. Once mathematics demonstrated a much richer plurality of coherent formal systems, the original transcendental anchoring became harder to maintain in its strong form.

From the perspective of MMMT, this plurality is easier to understand. Different formal systems can be seen as different structured tools within broader modeling mechanisms. Some become central because they are extraordinarily useful, stable, or productive. Others remain specialized. There is no need to assume that one privileged formal structure is built once and for all into cognition itself.

5.3. Pressure from logic and formal systems

A second source of pressure came from the later development of logic and formal systems. Kant wrote before modern symbolic logic, proof theory, model theory, and the broad landscape of non-classical logics. He therefore inherited a comparatively stable picture of logic and had little reason to imagine the later plurality of logical frameworks.

This matters because analytic judgments in Kant's framework are closely tied to conceptual containment and the principle of non-contradiction. That account made sense within the logical resources available to him. But later developments showed that formal reasoning can be regimented in many different ways, each with its own axioms, rules, and inferential behavior. Classical logic remained extremely powerful, but it no longer looked like the only formally coherent possibility.

This weakens the idea that the structures governing formal thought can be treated as fixed in the strong way Kant had in mind. MMMT accommodates this more easily. On a model-centered view, different logical or mathematical systems can be understood as different formal engines embedded in different modeling contexts. Their authority is not absolute and unconditioned. It is tied to how they function within the modeling tasks for which they are used.

5.4. Pressure from modern physics

A third source of pressure came from physics. Kant's account of space and time was developed against the background of the scientific world available to him, above all the success of Newtonian science and the apparent stability of Euclidean spatial intuition. As long as that framework dominated, it remained plausible to think that the basic structures of intuition and the deepest structures of exact science could be treated as closely aligned.

Later physics weakened that alignment. Advanced physical theory increasingly demanded mathematical structures that did not sit comfortably inside ordinary intuition. More broadly, the relation between physical theory and ordinary spatial-temporal intuition became much less straightforward than Kant's framework suggested.

For the purposes of this paper, the exact details are less important than their general philosophical effect. They made it much harder to maintain that the formal structures most fundamental to science must coincide with the forms most immediately given in ordinary human intuition. Once that coincidence breaks down, Kant's original grounding of mathematics and formal necessity becomes unstable, even if his structural insight into the role of formal reasoning remains valuable.

5.5. From pure intuitions to default models

We can now state the MMMT reinterpretation more clearly.

Kant treated space and time as pure forms of intuition: universal and necessary conditions for the possibility of human experience and mathematical cognition. MMMT replaces this with a weaker but more durable claim. Human minds operate with highly stable default models. These models structure ordinary perception and ordinary cognition so deeply that they can easily appear necessary and universal from within lived experience and long-established scientific practice. But they need not be fixed in the strong transcendental sense Kant assigned to them.

A default model can be extremely stable without being eternal. It can be widely shared without being metaphysically absolute. It can guide most ordinary cognition while still admitting exceptions, revision, or replacement in more advanced forms of inquiry. This is the shift that allows MMMT to preserve what was strongest in Kant's insight while abandoning the strongest and most vulnerable parts of his original grounding.

The same point applies more broadly to formal systems. Under MMMT, there is no need to assume one uniquely privileged logic or one uniquely privileged mathematical framework built into reason itself. There are instead multiple possible formal systems, each of which can serve as a structured engine inside a modeling mechanism.

5.6. What survives, and what does not

What does not survive unchanged is Kant's original transcendental grounding of formal cognition in fixed pure intuitions and in a narrow picture of the formal structures available to reason. Later mathematics, logic, and physics made that grounding too restrictive.

What does survive is the structural distinction itself. Cognition does involve a separation between empirical intake and formal transformation. Mathematics and logic do function as structured engines that can operate on represented content with special discipline and power. Kant saw this with unusual clarity, even though he explained it within a framework that later became too rigid.

This is why a reconstruction through MMMT is philosophically fruitful. It preserves the structure and revises the grounding. The next section turns to the closely related question of analyticity itself.

6. Analyticity after Kant and after Quine

The previous sections argued that Kant identified a real structural distinction within cognition and that his original grounding of that distinction could not remain intact. We must now face a further question. If Kant's original framework is no longer fully acceptable, what becomes of analyticity itself?

This question matters because the main thesis of this paper depends on preserving a meaningful role for analytic propositions. If analyticity disappears altogether, then the attempt to reinterpret Kant's theory as an early articulation of a modeling architecture loses much of its force. The answer developed here is selective. I agree that Kant's original account of analyticity cannot simply be retained unchanged. I also agree that Quine's critique exposed serious problems in any attempt to treat analyticity as an absolute and unconditioned category grounded in meaning alone. But I do not agree that analyticity must therefore be abandoned. Through the lens of MMMT, analyticity can be reformulated in a more limited and more precise way. It should be understood as a property of statements and operations within a specified formal system.

6.1. Kant's analyticity and its limits

Kant defined analytic judgments in terms of conceptual containment. A judgment is analytic when the predicate is already contained in the subject concept, and its denial leads to contradiction. This account works well enough for the contrast Kant wanted to establish between conceptual clarification and cognitive extension.

For the purposes of this paper, however, its limits are clear. Kant lacked the resources of modern formal logic. He therefore explained analyticity in semantic and conceptual terms rather than in explicitly syntactic or proof-theoretic ones. That leaves his account vulnerable once formal systems become more sharply articulated.

A modern reader immediately sees the difference. In a formal system, the notion of analyticity is often tied not to loose appeals to meaning, but to rule-governed derivability. Once axioms, definitions, and rules of inference are specified, a theorem can be said to follow from them in a precise way. This later development does not show that Kant was confused. It shows that his account was historically limited by the logical resources available to him.

6.2. Quine's challenge

This is where Willard Van Orman Quine becomes decisive. Quine's critique is often treated as the turning point after which the analytic-synthetic distinction could no longer be accepted in its traditional form.

His challenge operates at two levels. First, he argues that appeals to analyticity in terms of synonymy, definition, or "truth by meaning" are circular unless those notions are themselves clarified independently. Second, he argues that our statements confront experience not one by

one in isolation but as part of a larger interconnected body of belief. In that picture, even logic and mathematics are not absolutely immune to revision. They sit near the center of the system and are revised only with extreme reluctance, but in principle they remain revisable if enough pressure is placed on the whole network.

Taken together, these two lines of argument weaken the old picture in which analytic truths stand apart from the rest of knowledge as absolutely secure, unrevisable, and grounded in meaning alone. Quine's strongest conclusion is that the sharp boundary between analytic and synthetic statements cannot be maintained (Quine, 1951).

6.3. What MMMT accepts from Quine

MMMT accepts a substantial part of Quine's critique.

First, MMMT accepts that there are no absolute, unconditioned truths available to human cognition from a standpoint outside all modeling. This fits naturally with the No God's Eye View introduced earlier. Every statement we make is produced from within some model, some language, some conceptual framework, or some formal system.

Second, MMMT accepts that formal frameworks are plural and revisable. There is no reason to assume that one logic or one mathematical structure must have unconditional and final authority over all possible reasoning.

Third, MMMT accepts a limited version of Quine's point about revisability. From the perspective of human inquiry as a whole, no framework is beyond possible revision or replacement. Entire formal systems may lose centrality, become specialized, or be replaced by more useful frameworks in particular domains.

These points prevent any simple return to Kant. Any attempt to preserve analyticity must avoid presenting it as an eternal category grounded in meaning or in a single final logic built into reason itself.

6.4. What MMMT rejects in Quine's conclusion

At the same time, MMMT does not accept Quine's strongest conclusion. It does not follow from the revisability of frameworks as wholes that analyticity disappears within those frameworks.

To see the point clearly, we must distinguish two levels. One level is the level of our overall body of knowledge and scientific practice taken as a historical whole. At that level, Quine is largely right: there is no final guarantee that any framework will remain forever central or unrevised. The second level is the level of a specified formal system. Once such a system has been defined, its internal derivations do not function like ordinary empirical hypotheses. They function according to the rules of the system.

This distinction is decisive for MMMT. Quine's critique shows that we may replace one formal system with another. It does not show that statements inside a given formal system cease

to have a special status relative to that system. The fact that Euclidean geometry can be supplemented or displaced in some contexts by non-Euclidean geometries does not mean that Euclidean theorems lose their internal derivational character within Euclidean geometry. The existence of non-classical logics does not mean that classical derivations stop being formal derivations within classical logic.

6.5. Conditional or system-relative analyticity

We can now state the MMMT position more precisely.

A proposition is analytic, in the sense relevant to this paper, when its validity is determined by its place within a specified formal system. This includes the axioms, definitions, rules of inference, and theorems derivable within that system. Their status is not absolute. It is conditioned on the system in which they function. But within that system they belong to the formal component of reasoning and derive their force from rule-governed structure rather than from new empirical input.

To say that such analyticity is system-relative is not to say that it is arbitrary. Formal systems are not random collections of symbols. They are structured frameworks designed, adopted, and refined for particular types of cognitive work. Some are extraordinarily fertile and widely applicable. Others are narrow or short-lived. But once a formal system is specified, statements derivable within it have a distinctive status. They are not empirical discoveries in the ordinary sense. They are products of formal transformation internal to the system.

This reformulation also helps explain why analyticity matters so much for later science and technology. A system-relative analytic component can be isolated, standardized, optimized, taught, repeated, and eventually automated. It is precisely because formal transformations operate under explicit rules that they can be compressed into procedures and externalized into symbolic techniques, algorithms, and computational systems.

6.6. Why this matters for the paper

If analytic propositions are understood in this system-relative way, then the main thesis of the paper becomes stronger. Kant's distinction between analytic and synthetic cognition can be re-read not as a final classification of all truth, but as an early attempt to isolate a formal component of reasoning that later became central to modeling. What Kant described in the language of conceptual analysis and non-contradiction can now be reformulated in terms of structured formal systems and their internal transformations.

The plurality of formal systems does not destroy the significance of the distinction. It changes its grounding. Instead of one unique framework of reason, we now have a family of possible formal systems. Instead of absolute analyticity, we have conditional analyticity. But the basic structural point remains: formal reasoning can operate as a distinct component within broader modeling processes.

7. Mathematical Objectivity without Fixed Transcendental Forms

The previous section argued that analyticity can be preserved in a system-relative sense even after Kant's original framework and Quine's critique are both taken seriously. One further issue now becomes unavoidable. If Kant's strongest claims about fixed pure intuitions are no longer retained, how should we understand the remarkable objectivity of mathematics? How can mathematical concepts remain stable, exact, and widely shared if they are not grounded in immutable transcendental forms common to all rational knowers of our kind?

This matters because Kant's theory was not only a theory of propositions. It was also a theory of universality. If his original grounding is weakened, some new account of objectivity is required. Section 7 develops such an account through MMMT and MMToU.

7.1. Kant's solution

Kant's solution is elegant and powerful. Mathematical judgments are objective because the forms that make them possible are not private features of isolated individuals. Space and time are, in his account, universal forms of human intuition. When one person constructs a triangle in pure intuition and another person does the same, both are operating within the same underlying cognitive framework. That is why mathematical judgments can be valid for all human knowers of the relevant kind rather than being reduced to private psychological episodes.

This solution has an important strength. It does not treat mathematical objectivity as mere social agreement. It grounds objectivity more deeply, in a common structure of cognition. At the same time, its strength is tied to the rigidity already discussed in Section 5. Once those assumptions become unstable, the explanation of objectivity must be reworked.

7.2. The MMMT and MMToU reconstruction

MMMT and MMToU offer a different route. They begin not from immutable shared forms, but from modeling systems. In this framework, a mathematical concept is not first understood as a timeless object built into cognition. It is understood as a highly stable classificatory and inferential structure operating within minds and across communities.

MMToU draws a useful distinction here. A universal is an agent-level structure: a classificatory or conceptual data structure within an individual mind. An interuniversal is a collective stabilization of such structures across many minds through language, training, proof practices, notation, diagrams, textbooks, and institutions. This distinction allows us to explain how a concept can be individually instantiated and yet remain highly shared and highly stable.

Applied to mathematics, the point is straightforward. No individual mathematician owns the concept of triangle, function, or continuity in a private and unconstrained way. Each person acquires and uses a version of such a concept within a dense network of shared notation, proofs, examples, correction practices, and pedagogical norms. These shared structures make the corresponding interuniversals unusually strong.

7.3. Objectivity as convergence and stabilization

On this view, mathematical objectivity is not grounded in a single immutable transcendental framework. It is grounded in convergence, stabilization, and controlled formal practice. A mathematical concept becomes objective to the degree that the corresponding universals across many agents are tightly aligned and embedded in strong interuniversals. Proof standards, explicit definitions, formal derivations, and pedagogical discipline all increase that alignment.

This account has several advantages. First, it explains why mathematical objectivity is often stronger than objectivity in many ordinary empirical domains. Mathematical communities enforce especially precise criteria of correct use, valid derivation, and admissible transformation. Second, it explains why mathematical concepts can remain objective even when they become highly abstract and move far beyond what could plausibly be tied to ordinary spatial and temporal intuition. Third, it explains why objectivity can be robust without being metaphysically absolute.

This is an important difference from both simple subjectivism and simple conventionalism. The MMMT and MMToU account does not say that mathematical objectivity is just whatever a community happens to accept. Nor does it say that mathematics must be grounded in timeless forms already built into cognition in Kant's strong sense. It says something more precise: mathematical objectivity is a product of unusually powerful forms of conceptual and formal stabilization inside human modeling practices.

7.4. Why this matters here

This reconstruction helps the main argument in two ways. First, it shows that weakening Kant's original transcendental grounding does not lead to the collapse of mathematical objectivity. One can reject the strongest version of his account of shared pure intuition and still explain why mathematics remains highly stable, highly transmissible, and highly objective in practice.

Second, it reinforces the paper's reinterpretation of analytic propositions. If formal systems are embedded in strong interuniversals, then the analytic component of reasoning gains much of its effectiveness from that collective stabilization. Formal transformations are powerful not only because rules exist in the abstract, but because whole communities sustain systems of notation, proof, correction, and training that allow those rules to be applied with exceptional precision and reliability.

7.5. What is preserved from Kant

What is preserved is Kant's insight that mathematical objectivity requires more than empirical habit and more than loose linguistic coordination. Mathematics does depend on shared structures that are deeper and more stable than ordinary everyday concepts.

What is revised is the nature of those shared structures. Kant treated them as fixed transcendental forms of intuition. MMMT and MMToU reinterpret them as highly stable but

revisable default models and as tightly organized interuniversals sustained by collective formal practice. This makes the account less rigid than Kant's, but better able to absorb the plurality and historical development of modern mathematics.

8. Why the Separation Mattered Historically and Methodologically

The previous sections argued that Kant identified a structural distinction that MMMT can reinterpret in a more flexible way: the distinction between empirical intake and formal analytic transformation. We must now ask a further question. Why did this distinction become so consequential? Why should anyone care whether formal reasoning can function as a distinct component inside a broader modeling process?

The answer proposed here is simple. Once formal transformation is sufficiently separated from empirical intake and practical interpretation, it becomes much easier to improve that part of reasoning on its own terms. It can be made more precise, more compact, more teachable, more repeatable, and more reliable. It can also be delegated. What begins as a distinction inside human cognition eventually becomes a distinction inside scientific practice, education, technology, and computation.

This does not mean that Kant invented mathematical modeling or analytic method as such. Those clearly predate him. The claim is narrower. Kant helped articulate, with unusual philosophical clarity, a structural feature whose later development proved decisive.

8.1. Formal transformation as a detachable engine

A modeling process usually contains several kinds of activity at once. Some parts concern the intake of information. Others concern the interpretation of a situation and the selection of relevant features. Still others concern the choice of purpose. The formal part is only one component among these. But once a problem has been translated into a sufficiently clear formal representation, that component acquires a special status.

It becomes, in effect, a detachable engine of transformation. It no longer depends on constant reinspection of the original situation. It operates by rules internal to the formal system. If the representation is suitable and the rules are sound relative to the system, results can be generated with a degree of control that is difficult to achieve at the level of ordinary intuitive reasoning alone.

This is the decisive methodological gain. Formal reasoning allows certain parts of a cognitive task to be isolated from the messier parts without becoming disconnected from them. Input still has to be interpreted. Output still has to be reconnected to practice. But the middle stage can be disciplined in an unusually strong way.

8.2. Compression, standardization, and optimization

Once the formal part of reasoning is isolated, several further developments become possible.

The first is compression. A long and complex pattern of reasoning can be condensed into a compact rule, symbolic expression, proof schema, or algorithmic procedure. This is one reason mathematics is so powerful. A formula, once established, can summarize and reproduce an enormous amount of inferential work.

The second is standardization. If a formal procedure is explicit enough, it can be taught in a stable way, reproduced across many people, and checked for correctness. This reduces dependence on individual intuition and increases the uniformity of results.

The third is optimization. Once a formal transformation is sufficiently explicit, it can be improved for speed, efficiency, elegance, or reliability. Different notations can be compared. Different proof techniques can be evaluated. Different algorithms can be measured against one another. A process that remains fused with ordinary intuition is much harder to optimize in this way. A process that has been formalized can be refined systematically.

These developments are not accidental side effects. They follow directly from the fact that formal reasoning can function as a distinct component inside a broader modeling mechanism.

8.3. From calculation to automation

A further step follows naturally. Once a formal process has been made explicit enough, it can be delegated beyond the individual human mind. At first this delegation is modest. It may take the form of tables, written procedures, symbolic notation, or institutional routines. But the underlying principle is already present: if the formal component of a task is sufficiently rule-governed, then it need not remain tied to a single person's direct intuitive activity.

This is the deeper historical significance of the separation. It made possible the gradual externalization of formal reasoning. Calculation could be distributed across people, inscriptions, tools, and later machines. The rise of information technology radically amplified this process. Large parts of formal transformation could now be executed at a speed, scale, and level of precision far beyond ordinary unaided human cognition.

The same trend continues in more recent developments in computation and Artificial Intelligence (AI). None of this eliminates the need for interpretation, problem selection, or judgment about relevance. But it does expand the share of modeling work that can be delegated once the formal core has been isolated and specified clearly enough.

8.4. Kant's qualified contribution

At this point the historical claim must be stated carefully. The argument of this paper is not that Kant invented formal reasoning, mathematical modeling, or scientific method. Nor is it that later developments in logic, mathematics, and computation can be straightforwardly derived from his philosophy.

The claim is different. Kant helped make explicit a structural distinction whose later development proved immensely fruitful. He saw that cognition does not proceed only by

accumulating empirical content. He also saw that formal operations have a special role in the production of necessary and disciplined results. Even if he explained this through a framework that later became too rigid, he still articulated something philosophically important: formal reasoning can function as a distinct part of cognition rather than as a mere ornament of experience.

8.5. Why this matters for the main thesis

If formal reasoning can function as a distinct component inside broader modeling processes, then analytic propositions are not philosophically important only because they occupy a place in a traditional taxonomy of judgments. They are important because they belong to the part of reasoning that can be most strongly controlled, improved, and scaled.

Seen in this way, the modern importance of analyticity becomes easier to understand. Its value does not lie in providing access to an absolute, framework-independent certainty. Its value lies in enabling disciplined formal work within specified systems. This work can then be embedded in larger processes of representation, prediction, explanation, and control.

Later developments did weaken Kant's original grounding of the distinction. But they also revealed how historically productive the distinction itself was. The separation between empirical input and formal analytic transformation did not disappear as Kant's transcendental framework came under pressure. On the contrary, it became even more significant as formal systems multiplied, mathematical abstraction deepened, and computational methods expanded.

9. Conclusion

This paper set out to reinterpret Kant's theory of propositions through the lens of My Model Metaphysical Theory (MMMT). Its main claim has been that Kant's distinction between analytic and synthetic cognition can be read not only as a classification of judgments, but also as an early philosophical recognition of a structural feature that later became central to mathematical modeling. In many important cases of reasoning, empirical content is first taken in and organized, then represented in a framework that allows disciplined formal treatment, and only after that translated back into a form that can guide prediction, explanation, or action. Kant did not describe this process in the language of modern models, formal systems, or computation. But he did help articulate a structural fact of lasting importance: formal reasoning can operate as a distinct component within a broader cognitive process.

The paper also defended a supporting claim. Kant's original way of grounding this structure could not remain intact after the later development of mathematics, logic, and physics. His account tied mathematical necessity too closely to fixed pure intuitions of space and time and to a comparatively narrow picture of the formal structures available to reason. Later developments did not eliminate the structural distinction he had identified, but they did weaken the rigidity of the framework within which he explained it. MMMT preserves the distinction between empirical intake and formal transformation, but reinterprets the structures involved not as immutable

transcendental forms, but as highly stable and revisable default models operating within broader modeling mechanisms.

This reconstruction has consequences for analyticity. After Kant and after Quine, analyticity can no longer be treated as an absolute and framework-independent category grounded in meaning alone. But it need not be abandoned. The paper argued that analyticity is best understood in a more modest and more precise way: as a property of statements and operations within specified formal systems. In that system-relative sense, analytic propositions remain central to reasoning. They belong to the formal component of modeling mechanisms and perform the controlled derivational work once a problem has been represented in a suitable framework.

The paper also argued that mathematical objectivity can be preserved without retaining Kant's strongest claims about fixed transcendental forms. Here the resources of My Model's Theory of Universals (MMToU) proved useful. Mathematical concepts can be understood as highly stable conceptual and inferential structures sustained not only within individual minds but across communities through what MMToU calls interuniversals: collective stabilizations maintained by language, notation, pedagogy, proof practices, and institutional discipline. On this view, objectivity does not collapse into mere agreement, but neither does it require immutable structures built once and for all into cognition.

One of the broader implications of this reconstruction is methodological. Once formal analytic transformation is sufficiently separated from empirical intake and practical interpretation, it becomes easier to compress, standardize, optimize, teach, repeat, and eventually automate that part of reasoning. This is one reason the distinction identified in this paper became so consequential in the later history of mathematics, science, information technology, and Artificial Intelligence (AI). Kant did not invent formal modeling, but he helped articulate a structural feature whose later development proved decisive.

The general result can therefore be stated simply. Kant was neither simply right nor simply wrong. He identified a real and important structure in human cognition, but he interpreted that structure through a framework that later became too rigid. MMMT makes it possible to preserve the structure while revising the grounding. That is why Kant's theory of propositions remains philosophically valuable. Once freed from its original rigidity, it can still illuminate one of the deepest features of human reasoning: the cooperation of empirical input and formal transformation within the broader work of modeling.

This reconstruction also opens several directions for further work. A deeper comparison is needed between sequential modeling mechanisms and Quinean holism, especially concerning the extent to which problem solving is carried by local model construction rather than by revision within a single web of belief. A second direction concerns Kant's Table of Judgments and its relation to the Categories: through the lens of MMMT, one may ask whether these should be understood as fixed universal forms or as historically stabilized default operations of modeling. A third direction concerns the problem of objective validity in judgment, which could be reconstructed in terms of convergence and stabilization rather than transcendental guarantee.

Finally, Kant's doctrine of Schematism may deserve renewed attention, since it appears to address precisely the difficult middle space between conceptual structure and intuitional presentation that a model-centered reading of cognition also needs to explain.

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